

Safety+

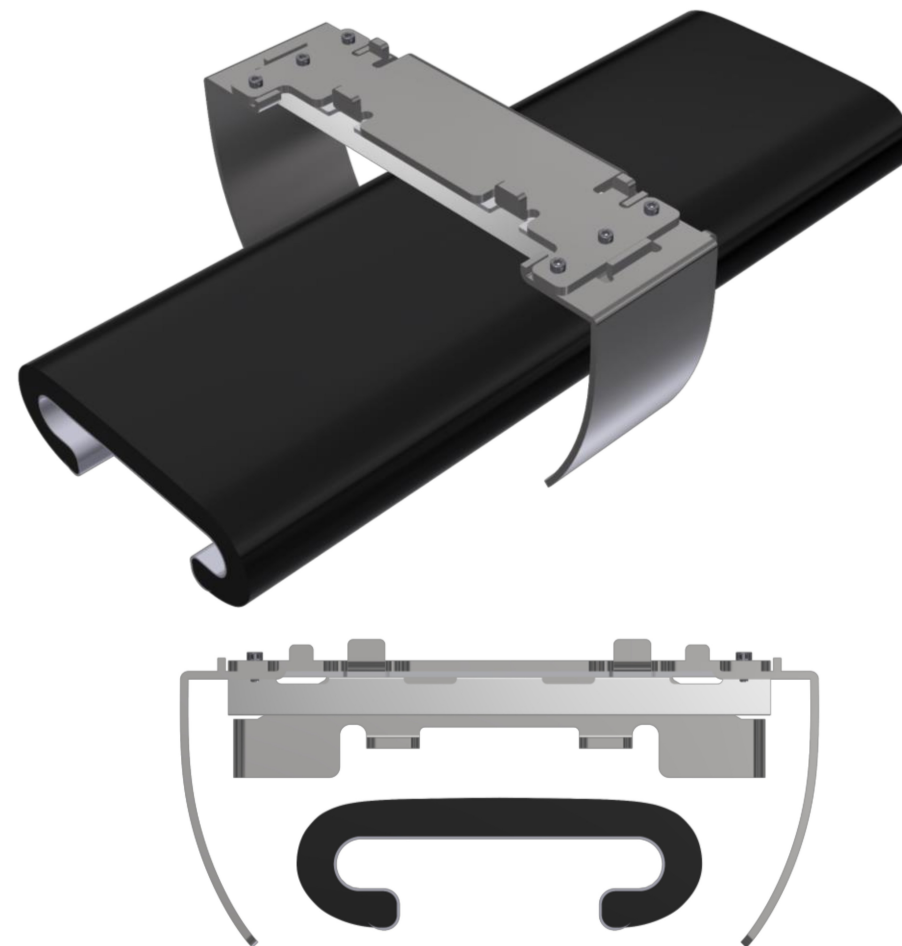


LED UV-C Handrail Sterilization

The compact LED UV-C Handrail Sterilization Module is mounted internally to eliminate the risk of entrapment. Multiple modules can be installed on a single escalator without compromising the structural integrity or performance of the NT or TuffFlex handrail.

LED UV-C Handrail Sterilization Module

- Handrails are considered by many to be dirty and unsanitary, which are primary reasons why people do not hold on to the handrail
- UV-C wavelengths effectively eliminate harmful bacteria on handrail surfaces
- Built-in side reflectors ensure full coverage of handrail, including sides
- Compact module is mounted internally to eliminate the risk of passenger entrapment*
- Fully guided, handrail passes through the modules as it runs, giving consistent exposure to UV-C sterilization
- Will not compromise the structural integrity or performance of TuffFlex and NT handrail

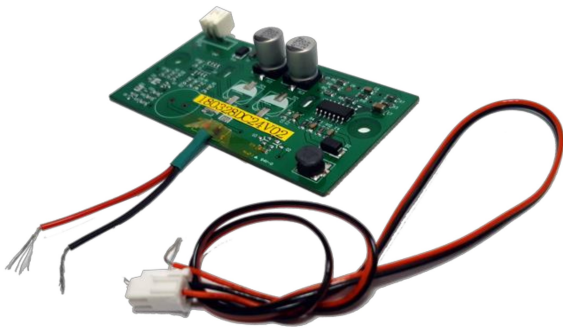


*Mounting bracket not included

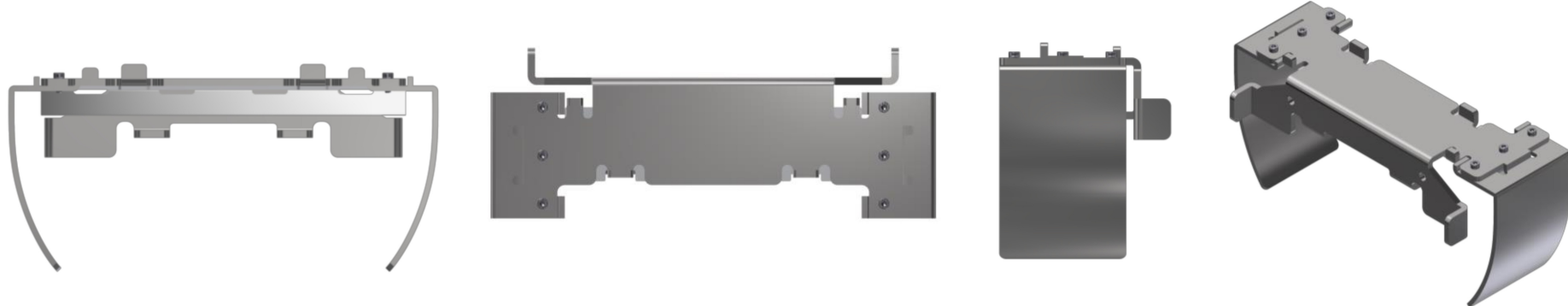
LED UV-C Handrail Sterilization Module > Overview

- Each module utilizes four 10mW LEDs that cover the width of the handrail surface
- Built-in side reflectors ensure full coverage of handrail, including sides
- UV-C wavelengths effectively eliminate harmful bacteria on handrail surfaces
 - 99.99% sterilizing power for E.Coli
- Prolonged exposure to UV-C wavelengths from this device will not impact the service life of NT or TufFlex handrails

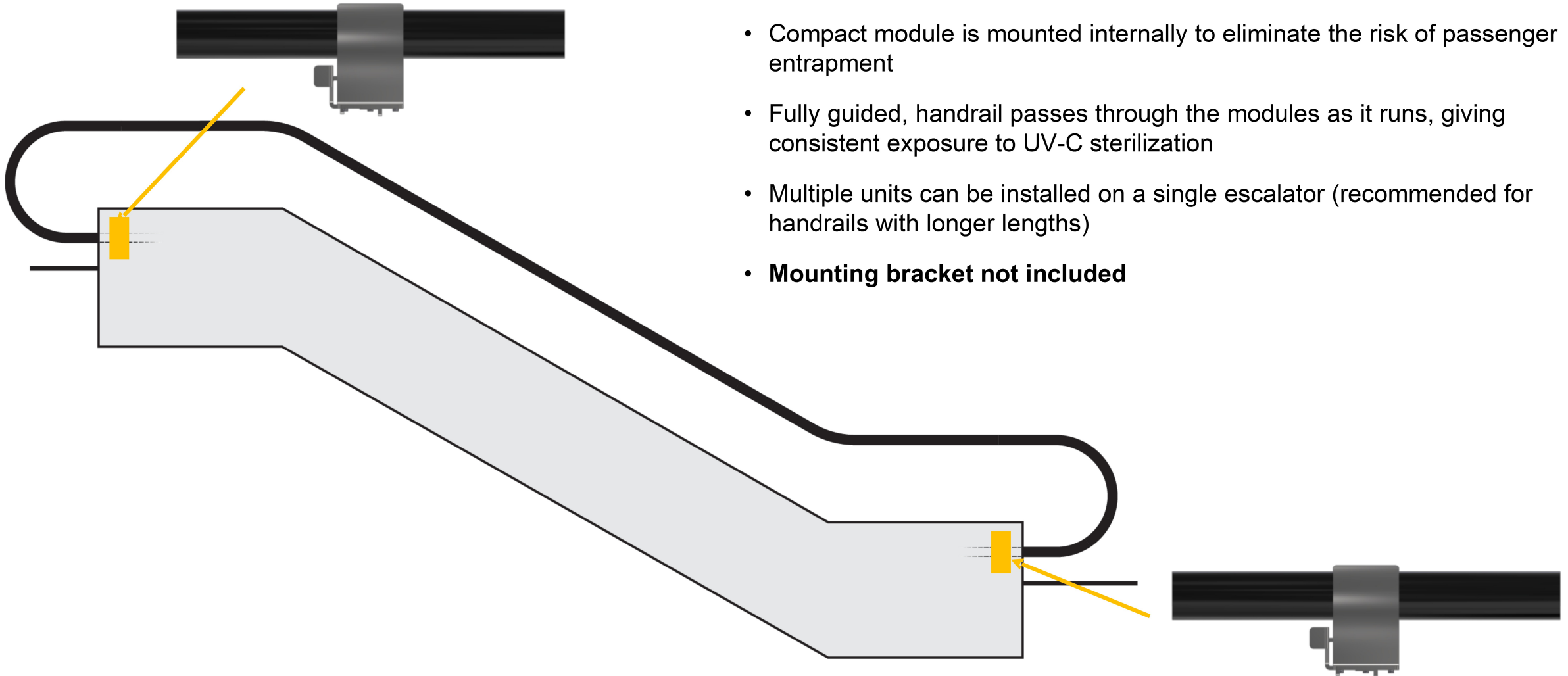
UV-C LED Module (10mW × 4ea)
Total : 40mW (28V@100mA Typ.)



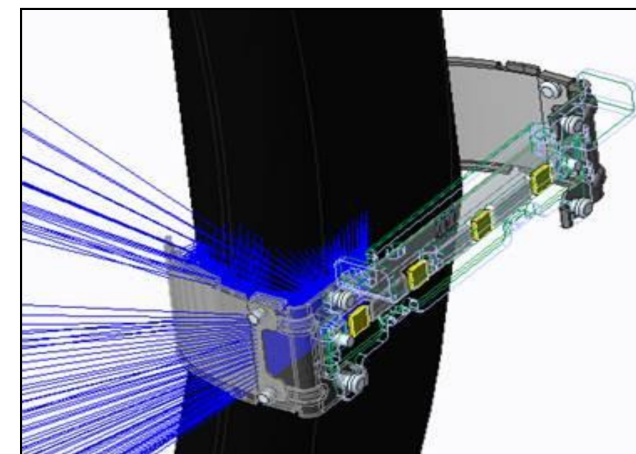
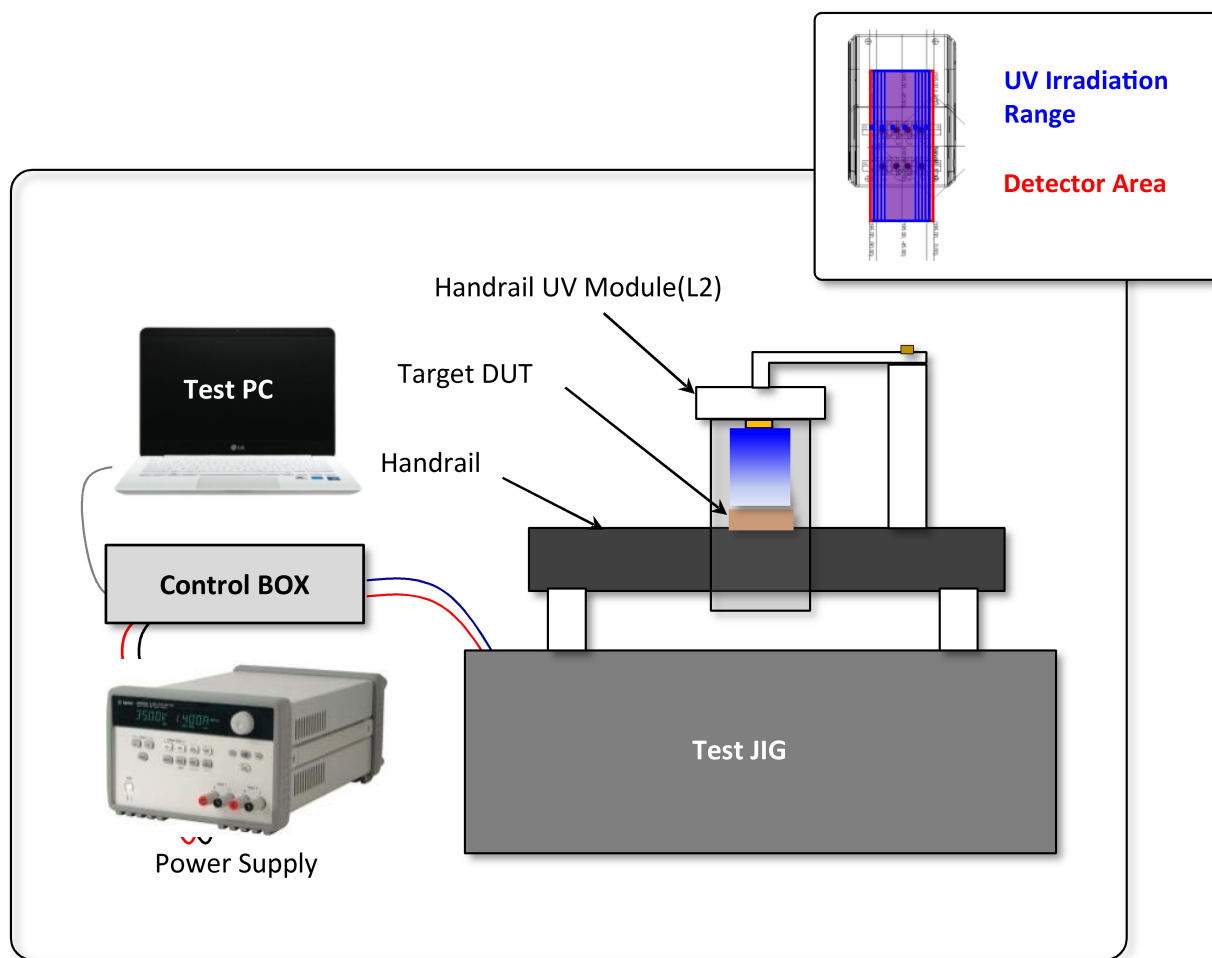
PCB Driver



LED UV-C Handrail Sterilization Module > Installation and Placement




LED UV-C Handrail Sterilization Module > Bactericidal Test (E.coli) > Test Conditions



- **UV Irradiation Time**
 - 1) Operation Speed of Escalator : 0.5m/s
 - 2) UV Irradiated Area : 70.5 x 200 mm
 - ⇒ **UV Irradiation time : $200 / 500 \text{ (mm/s)} = 0.4\text{(s)}$**
- **UV Irradiation Interval**
 - : Once every 85 sec
- **UV Irradiating Time (Simulated Handrail Turn time)**
 - : 1 / 5 / 10 / 20 / 30 / 50 / 100 / 200 times (8 conditions)

LED UV-C Handrail Sterilization Module > Bactericidal Test (E.coli) > Test Results



BEYOND ASIAN HUB, TOWARD GLOBAL WORLD

TEST REPORT

98, Goyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea
 Report No : TBK-2018-010516
 Representative : Jong-Seok Park
 Company name : LG Innotek
 Address : 17F, LG Seoulstation Bldg., 98, Huam-ro, Jung-gu, Seoul, 04637, Korea.

TEL 82-2-2164-0011 FAX 82-2-2164-0012
 Receipt Date : 2018.10.11
 Test Completion Date : 2018.10.11


Sample name : UV sterilizer for Handrail

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Bactericidal test(E. coli : 1 cycle)	CFU/Carrier	Control group	4.3 x 10 ⁵	Client Provided Test Method
Bactericidal test(E. coli : 1 cycle)	CFU/Carrier	Test group	1.8 x 10 ⁵ (16.3 %)	Client Provided Test Method
Bactericidal test(E. coli : 5 cycles)	CFU/Carrier	Control group	3.6 x 10 ⁵	Client Provided Test Method
Bactericidal test(E. coli : 5 cycles)	CFU/Carrier	Test group	2.4 x 10 ⁴ (93.3 %)	Client Provided Test Method
Bactericidal test(E. coli : 10 cycles)	CFU/Carrier	Control group	3.4 x 10 ⁵	Client Provided Test Method
Bactericidal test(E. coli : 10 cycles)	CFU/Carrier	Test group	1.2 x 10 ² (99.9 %)	Client Provided Test Method
Bactericidal test(E. coli : 20 cycles)	CFU/Carrier	Control group	3.3 x 10 ⁵	Client Provided Test Method
Bactericidal test(E. coli : 20 cycles)	CFU/Carrier	Test Group	20 (99.9 %)	Client Provided Test Method


Test Results

Usage of Report : QUALITY CONTROL

Note : 1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website (www.ktr.or.kr) or QR code to verify the authenticity of the certificate.
 2. This test report shall be used only within the purpose of its defined usage and shall not be used to public relation, advertisement and lawsuit.
 3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.



Prepared by Kim Jungseok
Tel : 02-2092-3946




Reviewed by Jin-Sik Cho
Tel : 1577-0091(ARS ①-④)

2018.10.31

Korea Testing & Research Institute

President



QR Code for forgery

Page : 1 of 1

전자문서본은 시험결과에 대한 참고용입니다.

전자문서본(Electronic Copy)

KTR KOREA TESTING & RESEARCH INSTITUTE KTR-QP-T09-F01-02(07)

AA(210 X 297)

Summary:

- In just 5 handrail cycles, over 93% of E.coli bacteria is eliminated
- 99.9% of E.coli bacteria is eliminated after 10 handrail cycles